Equipping the Constructivist Researcher: The Combined use of Semi-Structured Interviews and Decision-Making maps

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Abstract: An interview is a technique used by qualitative researchers to elicit facts and knowledge about the phenomenon under investigation using a series of interview questions. Nonetheless, the establishment of conversation and negotiation of meaning during the interview process is still challenging for those who conduct interviews, no matter how skilled or experienced researchers are with the process. It is felt in particular that researchers would benefit from the use of an instrument that, in the course of semi-structured interviews, would foster an environment where the ideas and meanings conveyed by informants could be developed and further discussed in order to achieve a deeper understanding of the phenomenon under investigation. Therefore, this paper attempts to develop and introduce decision-making maps as a new instrument to be used during the process of conducting semi-structured interviews. This newly proposed instrument is inspired by the concept and practice of perceptual mapping. The paper discusses the rationale for proposing the development and application of decision-making map in the context of semi-structured interviews, and reflects on the range of implications for the researcher, for participants, and for the practice of qualitative research that claims affiliation with constructivism.

Keywords: inductive research, constructivism, qualitative interview, perceptual mapping, decision-making map

1. Introduction

Cohen & Manion (1994, p.36) described the constructivist approach to research as being based on understanding the world of human experiences. This world of experiences is continuously shaped through the human interaction with objects and other subjects. In order to access and achieve an understanding about human perceptions, one of the main requirements of the constructivist approach is the establishment of a reciprocal and communicational ground between the research project participants and researchers in the co-construction of meaning. Eventually this would lead to building a theory that is based on the experiences of researchers and that of research participants (Mills et al. 2006).

Several authors have discussed the use of constructivist epistemological principles in inductive research. The constructivist paradigm traditionally follows qualitative research methods, although quantitative methods may also be used in support of qualitative data (Mackenzie & Knipe 2006). Since constructivist researchers tend to rely on participants' viewpoints about the situations under investigation (Creswell 2003, p.8), the vast majority of inductive research remains interview-based and interpretivist in nature. Accordingly, the use of interviews as a data collection method in inductive research is justified by its affinity with daily-life conversations and the centrality of interactions, exchanges, and negotiation of meaning between two parties (Kvale & Brinkmann 2009), which corresponds to constructivist approaches to research.

There are different approaches to carry out an interview, although the dominant characterisation of interviews is based on the dichotomy between structured and unstructured interviews (Collins 1998). However, more varieties of interview styles have been recognised by researchers (e.g. May 2003, p.121), such as semi-structured interview, group interview and focus group interview. Each one of these types follows their own approach to conduct an interview and to collect the research data. A clear sign of the differences between each type of interview styles is the way the interview questions are formulated and the amount of freedom given to interviewees in their replies to each interview question (e.g. Bryman 2012). Nonetheless, the

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operationalization of qualitative interviews' underlying epistemological principles remains complex and at times controversial.

Whether the researcher applies a semi-structured or unstructured interview, there is an unconditional principle that researchers need to adhere to during the interview process, which is the capacity of maintaining social negotiation of meanings between the interviewee and interviewer. This component is somehow missing or underachieved during the operationalization of research that claims a constructivist affiliation. In addition, most of the tenets of modern inductive approaches such as thematic analysis, grounded theory or even phenomenography are predicated in listening to informants' perceptions of the social world around them, interpreting them and producing a theory that attempts to generate a context-bound understanding. This process contains an inherent artificiality since researchers are trying to understand social worlds by interpreting informants' perceptions without any feedback loop that enables negotiation and validation of the adequacy of the interpretation.

To address the challenge of researchers' exclusive reliance on the interpretation of interview evidence to construct their studies, this paper proposes the introduction of a methodological innovation in semi-structured interview design: the use of decision-making maps that help both the researcher and the informant negotiate meaning, define data and advance interpretations in a collaborative fashion.

This is particularly important in the context of qualitative research that is aligned with a constructivist conceptualisation of knowledge – one that asserts that researchers must rely upon the "participants' views of the situation study" (Creswell 2003, p.8). The difficulty in constructivist research is exactly demonstrating that the participants' view of the situation as reported in research findings is not simply the result of researchers' interpretive whim, and that negotiation of meaning has in fact occurred. This is intimately related to what Denzin and Lincoln (2005) describe as constructivism's subjectivist epistemology, in the sense that knower and respondent are co-creators of understandings (Denzin and Lincoln 2005). The use of decision-making maps in conjunction with semi-structured interviews, as advocated in this paper, enhances and materialises the opportunities for co-creation of understandings between researcher and participant, at the moment of data collection.

Further explanation of this process and its main stages are advanced in the following sections. A detailed description of the rationale and process of decision-making maps is provided in Section 2. Section 3 discusses the stages, difficulties (and how they were overcome) and implications of applying the instrument to an empirical context: a single case study of a UK local city council's decision-making process concerning new IS projects. The paper closes with a recommendation to use decision-making maps in the process of semi-structured interviews to promote interaction with informants, to foster goal-oriented thinking, and to operationalise social negotiation and co-production of knowledge.

2. A description of the development of decision-making map

> *"Researching a problem is a matter of using the skills and techniques appropriate to do the job required within practical limits: a matter of finely judging the ability of a particular research tool to provide the data required and itself a skill" (Hughes & Sharrock 2006, p.12).*

This section describes the process of developing decision-making maps as a data collection instrument to be used in conjunction with semi-structured interviews. A review of perceptual mapping and its uses in Marketing research is provided, since the idea to design decision-making maps for interpretive, interview-based research stemmed from this field. This is followed by a detailed explanation of the structure and process of the proposed data collection instrument.

2.1 What is the perceptual map?

Within Marketing research perceptual maps have been known as a powerful technique which is used for designing new products, advertising, determining good retail locations and developing several other marketing solutions and applications (Hauser & Koppelman 1979). Examples of the use perceptual mapping in Marketing research include Kim's (1996) perceptual mapping of hotel food and beverages' attributes and preferences,

Wen and Yeh's (2010) investigation of customers' perceptions and expectations concerning international air passenger carriers, or Maltz et al.'s (2011) investigation of sourcing managers' perceptions of low cost regions.

In general terms, perceptual mapping techniques help organisations understanding how their products are perceived by consumers in relation to the different products in the marketplace. Perceptual mapping techniques aim at producing a diagrammatic representation of that perceptual space occupied by organisations (Kholi and Leuthesser, 1993). A typical perceptual map will feature the following characteristics: pair-wise distances between product alternatives that indicate how closely related products are according to customers' understanding; a vector on the map that "geometrically denote[s] attributes of the perceptual map"; and axes that suggest "the underlying dimensions that best characterise how customers differentiate between alternatives" (Lilien and Rangaswamy, 2004:119). Perceptual maps' dominant approach to collect and analyse data on consumers' perceptions of products is objectivist, developing in most cases via attribute based methods (factor analysis) or similarity based methods (multi-dimensional scaling).

2.2 A qualitative design of decision-making map

A central claim advanced in this paper is that some features of perceptual mapping techniques can be developed in qualitative research designs, in conjunction with semi-structured interviews, provided that the researchers take into account the particularities of "verbatim conversation" that occurs between interviewee and interviewer as the way to find answers for questions such as "how" and "why" (McNeill & Chapman 2005, p.22).

Unlike the perceptual mapping techniques used in Marketing research, the priority is not extracting meaning from numerical approaches and statistical analysis of the social facts, or applying multidimensional scaling and factor analysis to construct a perceptual map.

Furthermore, the perceptual map as used in Marketing research is the outcome of a technique consisting of detailed procedures, whereas the qualitative decision-making map proposed in this paper consists of an instrument designed to collect information during the semi-structured interview.

The perceptual map as used in Marketing research includes three characteristics. Firstly, it has pair-wise distances between product alternatives that specify how close or far the products are in the mind of customers. Secondly, it has a vector on the map that indicates magnitude and direction in the geographical space of map. Finally, it displays axes of the map that show the underlying dimensions that characterise how alternatives are differentiated by customers.

Based on these fundamental characteristics, we developed the decision-making map as a data collection instrument. The details pertaining to the operationalization of the proposed instrument are advanced in the following sections. An empirical application of the instrument is discussed in section 3.

2.2.1 The processes of decision-making map

Departing from the core principles of perceptual mapping, we have designed a new instrument, which should be used during the semi-structured interview process. In practical terms, it requires both interviewees' and interviewer's engagement in producing a diagram on a sheet of paper (e.g. A3 size) provided by the researcher.

Although consisting mostly of blank space where the informant is expected to jot down concepts and ideas, the diagram provides quadrants organised according to dominant research perspectives that will be used as the bases for discussion and conversation between informant and researcher. The selection of dominant perspectives is informed by the review of literature in the substantive area of research study and by earlier observations of the phenomenon under study. The literature review helps the researcher identify sensitising concepts and points of departure – not strict perspectives that could detract the researcher's attention from emergent data. Accordingly and in a similar perspective to that advocated by Charmaz (2006), the literature review helps to demonstrate grasp of relevant concepts. Furthermore, should research participants want to make contributions beyond the conceptual terms suggested by the diagram, an additional and entirely blank map was to be made available for use during the interviews.

Table 1: Two principals of decision-making map

1	Identifying related perspectives of the research topic under investigation
2	Filling the spaces in the decision-making map

Also drawing from the original use of perceptual mapping in Marketing research, the proposed decision-making map instrument includes different axes that operate as borders to the dominant research perspectives extracted from the literature and earlier observations of the phenomenon. However, the position in the diagram where the informant decides to jot down ideas and concepts (i.e. under which quadrant or section, and how distant/close to the different axis) is not subject to quantification or measurement.

For instance, if after conducting the literature review we are able to identify three dominant perspectives related to the phenomenon under investigation, the diagram to be completed by the informant during the interview process would resemble what is depicted in Figure 1.

This proposed instrument involves the informant in the process of writing key terms which are related to the phenomenon of research investigation based on the informant's perceptions in terms of where those key terms should be placed.

It is expected that the process of filling the decision-making map is completed through a series of questions being asked by researcher that set the conversation in motion, stimulating the negotiation of key terms that are advanced by the informant and recorded in the decision-making map.

This practice can lead to a deeper understanding of how different dimensions affect the unfolding understanding of the substantive research problem, facilitating the identification of key themes and the process of theory-building. Furthermore, the process empowers the interviewer to ask more precise questions concerning the series of elements identified and written-down by the informant. There are also increased opportunities for comparison across elements and dimensions identified in each diagram.

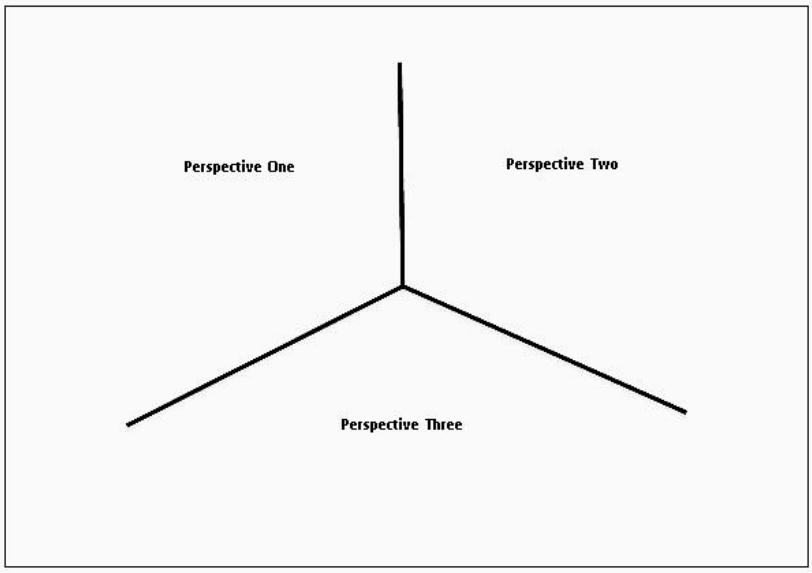

Figure 1: A sample of decision making map

More significantly this practice provides an opportunity for informant and interviewer to establish discussion and social negotiations of meaning over the subjects under investigation. We believe that this approach enables the visualisation of facts that emerge as influential themes according to the informants' perceptions.

Finally, this approach can enhance the process of data analysis and theory building, by enabling the production and mapping of informant-led theoretical abstractions in the form of themes and keywords that are positioned in the diagram.

3. A use of decision-making map in information system research

To illustrate the use of the decision-making map, this section describes the use of this instrument in the context of an Information Systems (IS) research project. It includes explanations about how the data collection process developed, what kinds of challenges during the application of the instrument were experienced, and what kinds of techniques have been applied to mitigate the difficulties encountered. The presentation of this case includes an overview of project's objectives, use of the decision-making map and challenges of applying the tool. The project sought to identify which elements influence public sector (UK local councils) administrators' decision-making when executing e-Government projects.

3.1 Objectives of research project

The development and implementation of electronic government (e-Government) have been studied since the early introduction of the concept of e-Government to public sector organisations. Various models and approaches have been suggested to follow by public sector administrators and researchers to investigate and monitor the trends of providing new e-Government services to the public. Different numbers of advantages and complexities have been listed during practitioners' engagement with the process of e-Government development and implementation. Nonetheless, after more than a decade of e-Government development and advancement, recent e-Government studies indicate that the public sector organisations in both developed and developing countries have mostly achieved the preliminary stages of the models (e.g. United Nations 2012). This finding leads us to question what issues or elements have hindered the process of developing and implementing e-Government services. To better understand this issue from an IS perspective, we recognised that the process of IS investment decision-making by public sector administrators to provide new e-Government services had to be studied. The existing literature displays very general knowledge about this area of study, since most of the currently available explanations on IS project pertain mainly to private sector organisations (Gauld 2007).

Due to the exploratory nature of this research, the selection of an interpretative case study was deemed appropriate (Walsham 1995). In addition, based on Yin's guidelines, if the research questions are categorised into "how", "what" and "why" questions, the focus of research is on contemporary event and the researcher has less control over events, the use of case study is the best approach (Yin 2009). Furthermore, the use of case study helps to obtain a holistic and in-depth knowledge in regard to the phenomenon under investigation (Pickard 2007, p.86).

In order to operationalise the objectives of this study, a local city council in South Yorkshire - Sheffield local council - agreed to participate in this research project as a case study. In total 17 interviews (corresponding to 1040 minutes) took place with key stakeholders (i.e. senior, middle and front line managers) in the process of e-Government development and implementation decision-making. The interview guide was designed to ask interviewees to reflect on which actions they considered as necessary and critical when deciding to provide a new e-Government service. Furthermore, the informants were asked to highlight elements that have impacted on their decision making or the decision-making of their colleagues when new services have been developed. The semi-structured interview guides have been used in conjunction with the decision making map as data collection instruments. After completing the data collection process, thematic analysis was used to code and interpret data.

3.2 Application of decision-making map

Following the principles described in section 2, we have first initiated the process of preparing for conducting interviews and designing decision-making maps with a sensitising review of the literature. The process of reviewing the literature in the substantive area of e-Government development and implementation led us into the identification of 13 models of e-Government development and implementation. Interestingly, among the identified e-Government development models, 8 out of 13 models have been developed between 2000 and

2002. Some discussion of e-Government development models and structures is inevitable, but nevertheless useful to adequately deliver the objectives of this paper.

Since the phenomenon of e-Government development and implementation was the subject of interest, the most prominent models of e-Government development and implementation were carefully studied and the way e-Government can transform public sector organisation was highlighted. As the result of reviewing e-Government literature, four categories of changes in the public sector organisation were identified when the e-Government development and implementation is a matter. We named those categories of changes as organisational, operational, technological and socio-environmental changes. This means that we identified four perspectives that could be migrated into in the decision-making map to facilitate data collection during interviews.

The interview transcript was organised into three sections. The first section included questions that asked informants to describe the past and current e-Government development and implementation in the local city council. The second section was centred around the decision-making map, and included questions that broadly covered the four perspectives identified for the elaboration of the decision-making map. Finally, the last series of questions focused on determining how appropriate the perspectives were to the specific context.

Therefore, the decision-making map was prepared based on four perspectives, giving place to four quadrants (each allocated to one perspective). In order to complete the decision-making, informants were prompted to reflect on the range of organisational, operational, socio-environmental and technological perspectives that affect local city council's decision-making to provide new e-Government services.

In case participants felt that that they wanted to contribute key terms that could not be allocated into any of the proposed quadrants, an additional and entirely blank map was also available for use during the interviews.

After informants jotted down which elements they perceived to be influential in the process of decision-making, the researcher prompted discussion and further elaboration on each of the concepts recorded by informants on the diagram, using interrogations such as: "could you explain the identified terms and elements?"; "Why do you think these elements are important?"; "Why did you put this element under this perspective?"; "Does this element impact on or applies to other perspectives?".

Discussion, negotiation and co-construction of meaning developed until both the researcher and the informant felt that there were no further concepts or ideas to discuss. Figure 2 illustrates one of the resulting decision-making maps. As can be observed in the figure, the participant identified a range of factors (e.g. financial factors, business requirements, corporate strategy, customer experience), inter-relations between them (represented by arrows), and a set of stakeholders – written down in green - that were perceived to be engaged in the decision-making process (e.g. councillors, central government, senior management).

Following a process of inductive thematic data analysis, a set of themes has been identified, representing participants' views on the range of factors that impact the process of e-Government development and implementation decision-making in Sheffield City Council. In broad terms, the emergent factors can be grouped in four major themes – organisational management factors, government policy factors, financial factors, and technological factors - with underlying sub-themes displaying a multi-layered configuration, as illustrated by the table presented in Appendix 1.

3.3 Challenges of using decision-making map

During the course of the 17 interviews during which the decision-making map was used the researchers were not faced with strenuous difficulties. However, filling the map was challenging for some informants. The most significant challenge was the time required by some participants to familiarise themselves with the diagram. This challenge was easily solved by having the researchers explain the purpose of the diagram, the process of recording terms or themes, or providing assistance with filling the map.

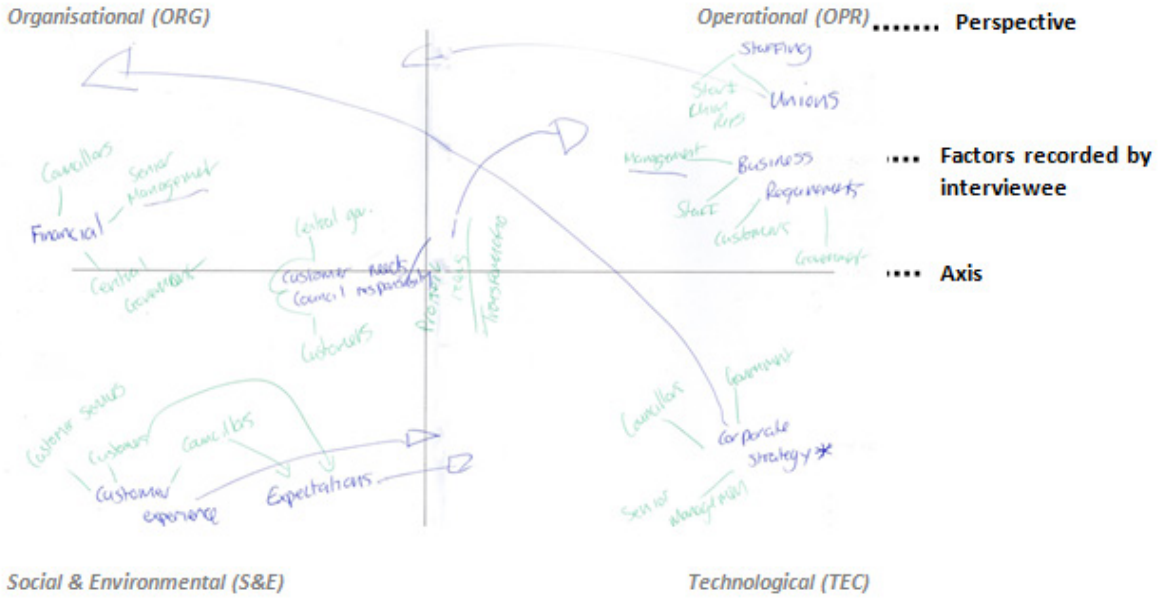

Figure 2: Example of a decision making map where one participant recorded perceived factors of e-government service development

Informants were seldom more willing to engage in the conversation than to record their ideas in more abstract terms with the help of the diagram. In these cases the researchers were aware of the need to respect informants' preferred way of expressing their thoughts. The recommended course of action for these cases would be for the researcher to start writing notes about key terms mentioned by the interviewees and later on discuss the highlighted materials, and inquiry about their location on the map. It is important to note that this implied making sure that the recording of terms and concepts and their interpretation had been a true reflection of informants' discourse.

The positioning of elements and factors on the map may also distract the informants' cognitive process because they may be excessively concerned about where the elements need to be assigned. However, this issue can be easily avoided by asking participants to highlight the aspects or factors that they perceive as relevant and then begin the process of negotiation to allocate them into one of the quadrants.

Another issue may be the occurrence of informants who are so deeply immersed in the process of identifying factors that they forget to determine their location in the quadrants. If the researchers interrupt them at that moment, they may feel intimidated and this may interfere with the thought flow process. In these circumstances the advice would be to first let the informant complete the identification of terms and elements for all perspectives contained in the map, and subsequently prompt discussion about their location and internal relationships within and across the quadrants.

However, since the location of terms on the diagram is important to the interpretation of data, the researchers must avoid providing subjective suggestions to the informant. This can be achieved with the use of laddering interview techniques (Reynolds & Gutman 2001), more specifically the use of 'why' questions that address the reasons for their term choice and location preferences.

A possible limitation associated with the use of decision-making maps may be the researchers feeling that it is at times difficult to establish positive rapport with informants when they are being asked to complete a task. However it can be counter-argued that the instrumental potentialities of the decision-making map are empowering of interviewees' ability to uncover root concepts, and that empathy may be generated in the process of negotiation to allocate terms into quadrants.

Another drawback is the potential difficulty in managing the "essential tension in interviews" (Rapley, 2001), that of balancing the need to collect data with a genuine commitment to interactional involvement. This can be minimised through using the map as an opportunity to engage in the collaborative construction of a deep, textured picture. The map is not a deterministic tool, but it can certainly operate as a topic initiator and/ or as an effective producer of follow-up questions.

Finally, informants' disabilities may impede the process of completing the diagram. Should this occur, the researchers can assist the informant in the process of completing the diagram through creating opportunities to maximise discussion around key terms and their location in the diagram.

4. Conclusion

In this paper, the need for methodological innovation along the lines of the constructivist research paradigm is emphasised. The novel methodological instrument outlined is a decision-making map, in which a semi-structured perceptual map - organised around literature review-informed axis and quadrants - is used by the investigators to promote interaction with informants in an interview situation, to foster goal-oriented thinking, and to operationalise social negotiation and co-production of knowledge. By engaging the informant in the identification of major perceptual themes this process gives the informant the steer, which can prove extremely helpful in improving the validity of qualitative research that claims affiliation with constructivist ontology. In practical terms, the decision-making map operationalises an important tenet of constructivist research – that of social negotiation of meaning – by operating as an instrument for co-creation of understandings between researcher and participant, at the moment of data collection. It creates moments for discussion and it allows the recording of the concepts that participants chose as the best descriptors for their perceptions. In so doing, it reverses the typical accountability relations that develop in an interview encounter and it increases the plausibility of analytical theorisations that are not a monopoly of the researcher's interpretive capabilities.

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Appendix 1 –

Emergent themes representing participants' views on the range of factors that impact the process of e-Government development and implementation decision-making in Sheffield City Council

Organisational management factors	Strategic factors	Corporate strategy Reputation management Project initiators	Sideways Bureaucratic	
	Operational factors	Business performance	Effectiveness of governance processes Efficiency of governance processes	
		Human resources management	Training Human resources assessment	
		Change management	Communication	Organisational support for change Communicators' behaviour
			Timing Degree of operational development	
Government policy factors	Central government policy Regional government policy Green ICT policy			
Financial factors	Economic climate Budget IT costs	Application costs Hardware costs		
	Cost-benefit assessment	Profitability assurance Capacity assurance Capability assurance		
Technological factors	IT risks	System failure Security concerns		
	Scale of IT improvements	In-house infrastructure potential Outsourcing		
	System accessibility	Equality assurance Citizen engagement		